

U. S. Department of Agriculture.

FIELD DIARY

OF

Mr. *Vernon Bailey*

1913

(Official title.)

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INSTRUCTIONS.

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James Wilson

Secretary of Agriculture.

8-833

July 1+2

Elk River, Minnesota
Visited the Tamarack Swamps
to learn present condition
of the Sawfly Larvae which
have defoliated and killed
some of the trees in 1911+1912.

Found a few but not
in numbers to seriously
injure the trees. A
branch here and there would
have a bunch of the caterpillars
eating the leaves, but no
serious harm is done unless
the leaves are all eaten off
from a large number of
branches. There are
some dead branches and
an occasional dead tree
from previous years.

Birds were numerous
in the swamps and were
evidently attracted there
by the caterpillars of which
many species seem very
plentiful. Those found in the
swamps were

Black-billed Cuckoo

Hemlock Thrush

Bluebird

Chickadee

Maryland Yellowthroat

Red-eyed Vireo

Crow

Goldfinch

Song Sparrow

Flicker

Hairy Woodpecker

Rough Grouse

Many others were common along
the borders and were undoubtedly

feeding on the caterpillars.
It is evident that the abundance
of birds is due in part to the
caterpillars & that the decrease
in caterpillars is due in large
part to the abundance of birds.
See note book for list
of birds of the vicinity.

July 3 - Took a 10 AM, N.P.
train for Fargo, and arrived
there about 7 P.M.
Went to Gardner Hotel.

July 4 - Went out to
Dr. W. B. Bell's place near
the Agricultural College to
have a talk with him
in regard to field work
for the summer. Arranged
to meet him at the fair
grounds at 2 P.M. to
see the exhibit of birds
he had at the fair.
Then went to Specimen
Hall at the Agric. College,
to see the rest of his
collection of birds and
mammals.

Purple Martins are
common in the central
business portion of Fargo,
and set on the wires and
edges of roofs over the
streets.

July 5 - Took a 6:10 AM Great Northern train for Grand Forks and Devils Lake, but it was a slow local and did not reach Devils Lake till 3 P.M.

Ran over to the Biological Laboratory on the lake shore and saw Dr. M. A. Brauner and Alf Eastgate. Planned for a trip to Sulby Hill tomorrow.

The Biological Laboratory is on the lake shore about 4 or 5 miles south of the town and is reached by a dummy engine street car line that runs about every hour.

July 4 - Took first canoe to
the Biological laboratory at
the lake and went with
Prof. Braymon & Eastgate
across lake in launch
to Sully Hill on south
shore.

The Hill is a great ridge
or lateral moraine probably
500 or 600 feet above the lake
and reaching several
miles along the south shore
and then swinging south
in a broken ridge to Devil
Heart Butte & beyond.

The north slopes of this
ridge are densely timbered
down to the lake shore,
but the peaks and south slope
are grassy prairie.

Much of the basins and flats are also timbered and there are marshes, springs and small freshwater lakes in the basins & gulches. The tops of the highest hills are sharp & usually capped by large burial mounds. The open peaks & crests of ridges are cool & wind swept, free from flies & mosquitoes. The woods are cool and moist with dense shade and a rich growth of sassafras, branching violets, and other shade loving plants.

The trees are Aspens, Bur oak, Basswood, Elm, Ash & Boxelder, in great abundance. A few Balsam poplar grows in cold places.

Wild plum, choke & Pin
cherries, Amelanchier bushes,
various willows, Beaked and
common hazelnuts, gooseberry
& Currant bushes, Red Raspberry
Symptlocarpas, Grapes, Woodbine
& Bittersweet vines, are
abundant. Wild rose &
Cornus bushes & parson ivy
are common.

On the prairie slopes are
Amorpha canescens & *Stipa*
& lots of other grasses.

The view from the hill
tops is over miles of prairie
lakes & hundreds of ranches
& many towns is superb.
A band of 6 or 7 young Indians
were on top of the highest peak
but refused to stay & be photographed.
Said they were from the *Timber Lake* Mts.

The woods are full of birds and we heard thrushes singing on both the up & down hills through the woods.

Service berries are abundant & getting ripe. There are also lots of gooseberries, nearly ripe, green currants, a few ripe raspberries & lots of wild strawberries. Plums, choke & pin cherries will ripen later & still later lots of grapes & nectarines & bitter-sweet berries. Oceans of aspen & poplar berries make good winter bird food. Abundance of bur oak acorns & both kinds of hazelnuts will supply plenty of squirrel food & much of the brush is cut of 2 or 3 feet high in winter by cottontail & snowshoe & fox & rabbit.

A little smooth green
snake was found on our way
down the hill and kept alive
for a specimen by Dr. Brown.
Big green spotted frogs
were common on top & on
the sides of the hill.

One fresh coon track was
seen in the road.

July 7. Left Devils Lake
on the G.N. for Minot &
Bertbold & Crosby. 10:35 AM

No special change in
country till we reach Towner
on the Souris River, where
the wooded river bottoms
are crossed. About
5 miles west of the river
the sand dunes are struck
& for 5 or 6 miles we go through
a great line of them which
mark the old Souris Lake
shore. Sandy soil &
occasional dunes
continue west to near
Granville. Then the prairie
becomes rolling again &
the soil black & clayey.
At Minot the river runs
through a deep wide bottom

which suggests a much larger stream in the post glacial time.

Just west of Minot we climb up over high bluffs on the SW side of the river and finally come out on top of high plains. Here there is evidence of greater aridity in the short grass and hard soil.

Still crops are fairly good but small & late as they are all over the state.

The recent heavy rains have started crops growing in good shape & will probably make a fair yield.

Reached Bertold at 2:45 & wait till 4:10 for train to Crosby.

Continued with long line of bluffs
on left to Stamped, then
over more open country west to
Crosby. Arrived 8 P.M.

Slightly undulating prairie on
all sides. Not a tree or bush
in the whole country.

Few lakes or sloughs and
only occasionally a cañon

Prairie grass & plants
rather short but crops are
better than farther back.

Very little of the country
remains uncultivated.

The green is the color of
wheat & oats & barley and
flax as far as you
can see, with only
here & there a patch of gray
green prairie grass.

July 8. Tramped over country west of town and set traps and caught a few mice in my hands & shot a few birds. Found the ground swarming with a host of little green caterpillars about an inch long. They are feeding on *Chenopodium* and Russian Thistle & nothing else that I can find. Birds & mice are feasting on them, but can make no impression on their numbers.

Mosquitoes are very numerous & troublesome, even on tops of hills where the wind blows at noon. They bother so I could hardly set traps.

Very windy in afternoon, cool.

July 9. Got a team & driver
and struck for the hills
south of town. Drove about
15 miles but did not reach
the highest part of the Coteau.

Aneroid at Crosby set
at 1950 feet went up to
2250 on the highest ridge
I reached. Should think the
hills farther south may run
to 2400 or possibly 2500 feet.

There is no trace of any
but Transition zone. Not a
tree or bush of native timber
and the small vegetation
runs toward Sonoran rather
than Canadian.

A single *Prosopis esculenta*
may suggest proximity to
Sonoran. The aridity and
possibly an influence from west
winds may serve to keep it warm.

Practically all of the level prairie country is in cultivation, but many of the hillsides and rougher slopes are still in prairie sod. Some of the hills are very stony with well rounded boulders of granite & other rocks. These hills are evidently a big lateral moraine of the last ice sheet. In many places they have a sharp saw look as of no great age.

Found no trace of real arid region plants, no cactus or yuccas or sage brush. There seems to be abundance of rain here for good crops & for trees. Young trees are starting well.

The mosquitoes are fierce,
and everywhere out of doors.
Even to the tops of the highest
hills they cover you and bite
in spite of the wind.

There are few sloughs or marshes
but they seem to breed in
every low spot on the prairie
& many of these now have
water in them.

July 10 - Rainy morning &
rained by spells most
of day. Wrote up reports
& notes,

July 11, Took 7:15 train east
to Kennebec and drove
across to Kenmare, about
6 miles, at the south end
of the long lake called
Upper Des Lacs. and on the
east side of the Middle
Des Lacs. These lakes lie
in the bottom of an old
trough that may be a glacial
~~sea~~ groove or more evidently
an ancient channel of a
big river. The bluffs on
both sides are probably 300
feet high, the tops level
with the prairie back of them.
Rained all day, very cold & windy.

July 13. Went out to the few traps
I got out yesterday in the rain
& found one *Microtus drummondii*
& 3 *Peromyscus*. Set more
traps & caught one *Microtus*
nivalis while setting them.
Followed up the valley which
is very similar to that
at Browns Valley, Minnesota
between Big Stone & Hauser Lakes.

July 13 - Prof. Bell arrived in
morning & went with me to traps
and hunting up to lower end of
Upper Des Moines. Got a
lot of *Microtus nivalis*, some
drummondii & *modestus* &
a *Sorex personatus* & a *richardsoni*.
Set more traps for *Sorex*.

July 14, Caught one more
Sorex personatus & shot
hinds & squirrels.

July 15, Went down to Lower
Saw Lakes in auto with
Mr. Engdall and Mr. Rich.
Shot a lot of birds & got
good notes. Found
Snowshoe rabbits abundant
in the thickets.

July 16 - Went over to Moose
River east of Tolley where
the beaver are destroying
timber on the place of Mr.
Carl Swenson. They had
done much damage & are
said to do more in other
places above and below there.
Photographed houses & cuttings.

July 17, M. E. E. Peck took
us in his big Aperson
car for a 2 day trip
among the lakes where the
water birds are nesting.
Followed up east side of Upper
Des Lacs to bridge, crossed
over to Bowbells, then west
to Lignite & beyond to Beaverts
Lake, then back to Lignite &
south to Wards Lake, then
S.E. to Twin Lakes and
camped on top of high
ridge between the Twin Lakes.
Swarms of water birds, ducks,
grebes & coots & waders in
both lakes; mostly breeding.
lots of young ducks & grebes &
coots. / Prairie fire on
one side. A wonderful moonrise
over the lake. A glorious night.

July 18 Continued on south
along the west side of the series
of Eastwood Lakes for about
120 miles. Then returned
to north of Twin Lakes &
past Little Butte, then
east to Nioby & Kenmore.
Reached home about 9 P.M.
just after sundown & had
supper with Mr. Peck.
Worked on skins till 1 A.M. &
went to bed.

July 19. Worked till 3 P.M. on
skins, then went with Mr.
Peck to get Ruddy ducks
on west side of Upper Des
Lakes, near the Bowbells
bridge. Then came back
& worked till half past 1 A.M.
& did not finish up our
specimens

July 20, Finished making
up specimens & packing &
shipping, Took train at
7:36 PM for Minot,
arriving at 10, & went
to Leland Hotel for night

July 21 - Hunted up C. E. Booth
the taxidermist, who has been
here since 1882 & got
a lot of good notes from
him. Did not find Mr.
Munnery, the other
taxidermist, who lives here.
Took train for Buford at
2 PM & reached Buford
at 7 P.M. There is no
hotel so went to house of
Mr. Twitchell, the livery
stable man & found it a
very pleasant place.

July 22 - Went out east on hills to find Microtus pallidus. Found lots of fresh signs & set traps but caught only Peromyscus or rodentus & lots of Peromyscus.

July 23 - Went out and got traps but no pallidus.

Packed up, wrote reports & took evening train to Williston. 8 to 9 PM.

There is a strong element of Upper Sonoran at Buford but the Transition species are dominant.

July 24 - Got a deer and
drove out over the valley
north and east of town &
in afternoon across the
river to the badland
buttes about 6 miles
south of town.

Got 10 *Eutamias pallidus*
a Lazuli hunting & a
Sylvilagus macrurus.

July 25 - Made up skins &
wrote back reports.

July

July 26 - Got a team and drove
east about 2 miles and south
about 10 miles to Bakers Ferry
across the Missouri River.
Then continued southeast
about 6 miles farther to
the ranch of Frank Bankes,
owner of the Birdhead Meadows
and a large stock ranch.
Mr. Bankes was away so we
returned to the Whitehouse
Ranch (3 miles back), set traps
and staid all night.
Set a line of traps in badlands
north of river before crossing
to be picked up on our return
trip. Big rough badlands extend
along both sides of river valley below
Williston as far as we could see
from the lowest point we waded
on the river. Big woods & marshy
areas & marsh & sloughs on flats:

July 27 - Took up traps and caught
Chipmunks + 2 species of *Microtus* + a
Eutamias and *Microtus* ^{*P. malgosiensis*} ~~malgosiensis~~ +
2 species of *Peromyscus* + a little
Sorex. Shot a lot of birds.
Returned across ferry and
stopped by river to skin our
specimens. Reached Williston
about 4 P.M. Made up skins
+ shipped a box by mail.
Wrote reports - Planned to catch
2:55 A.M. train in morning for
Minot so as to get the next
train for Bismarck.

July 28, Left Williston at 2:55 AM
for Minot & Bismarck. Stopped
on train at Minot and transferred
to Soo line, leaving there at
9 AM and reaching Bismarck at
6:30 PM.

Rolling, glaciated prairie
all the way after leaving Mouse
River at Velva. Considerable
timber, oak, elm, ash & Boxelder
along Mouse River.

Dog Den Buttes are a high
group of rounded hills with timber
in gulches. Good farming
country over them & all along.
Crops good where land is well
farmed, poorer on scratched in
stubble land. Mostly wheat & oats
& barley. Some rye is cut.
Corn is good where well tilled.
Potatoes are generally good.

No great variation of species until we strike into the river valley near Warburton, where there is an increase in Sonoran forms. *Hesperomys* armatus becomes abundant.

July 29 Went over to Mardan to see Allen, the taxidermist and got some good specimens from him, including 3 ♀ skulls of *Ovis montanus* from Mador, a swift fox from Mardan & some extra fox skulls. The sheep skulls were from sheep killed by the Marquis De Mores near Mador, many years ago & sent with others to Allen for mounting, but the ewes were not used.

Mr. Allen says the sheep we have mounted by Akelby probably came from Montana, as at that time he was getting sheep from a Montana dealer.

July 30. Left Bismarck at 8 A.M.
for Ft. Clark, via Mandan, on the new
branch of the N.P. which runs up to Stanton.
Reached Ft. Clark at 11 A.M. and found
Jewett skinning birds & mice.

He had a good series of *Dryobates* &
Thomomys & other things including
Perognathus fasciatus & *Rhithrodon* etc.
He took up traps & packed up and we all
returned to Bismarck, arriving at 6 P.M.

Got good notes & lists of plants &
Jewett has bird & mammal lists.

The country west of the river is
decidedly arid, the grass short & brown,
but good crops are ripening where
ever the seed was well put in.

The hay crop on the river flats is
heavy, but these flats should be all
in alfalfa.

Saw lots of sharp-tailed grouse all
along the R.R. Some good beaver ponds & dams.
Great crop of chokecherries & bullberries;

There are many Sauran species
along the Missouri R. from Pisceside
to Ft. Clark, on both sides, but the
dominant species are transition.
The Sauran element is less
strongly marked than at Buford
& Williston or at Medora,
but should be shown as a
strong trace.

Crops are earlier &
farther along than any where
back on our way. Corn is
good & will tassle out.

July 31 - Left Bismarck at
1:15 PM or a little later
for Medora. Passed beautiful
groves of elm & cottonwoods
& oaks just west of
Mandan, then climbed slowly
up onto the higher prairie,
and westward over short grass
plains to Dickinson, then
still higher to Billfield where
we began to go down toward
the Little Missouri through
Badlands. Some *Pinus ponderosa*
grows on the higher buttes and
lots of *Juniperus scopulorum*.

At Medora ^{5:30 PM.} the warm slopes
are largely upper Sonoran, the
cold slopes transition, see notes &
juniper reports.

Very acid, hot and dry.

Aug. 1 - Hunted and tramped over hills about Midvale till 10 a.m. when the west bound train was due, then wrote notes till it arrived at 4:20 P.M. Went west to Sentinel Butte, Arrived 5:30 P.M.

Soon out on high plains west of Little Missouri R. valley but many buttes and some badland gulches over plains. Country rather arid, but good crops of grain at Sentinel Butte where good dry farming methods are practiced.

Met Mr. Louis F. Crawford
Mr. Martin and
Mr. Kitchen, all
educated and progressive
men of Sentinel Butte.

Aug. 2 Got team & grub
to started at 9 AM for the
N. Dak. Nat. Forest, about 35
miles S.E. of Sentinel.
Drove straight south about
20 miles, then S.E. to the
Little Missouri River at
John Myers ranch, then
down the river to ranch
of Bill Folger, who lives
at north west corner of
Forest. & camped in his
pasture.

Rough badlands all
along the river, but big
grassy plains back from
the streams. Great
flat topped buttes, Sentinel
Flat top, and Bullion,
stand up 500 or 600 feet
above the prairie with
rock rims and deep gulch

sides, bushy ravines
+ some springs. Not much
timber, in them.

There are other big flat
topped buttes south of
Rivers, & many sharp
little peaks.

The river bottoms are sandy
and but and partly timbered
with cottonwoods & boxelder
ash & elm & Bullberry
and partly grassy flats &
part brushland.

Many good farms on the
prairie & good stock ranches
along the river & rough country.

Aug. 3 - Went on foot
over to Deep Creek on the
Nat. Forest and saw most of
the timber and the country in
general.

The forest is scattering
along rough edges of badland
valley rims, mainly on NE
slopes or rocky tops.

It is mainly scrubby yellow
pines, the best of which has
been cut out long ago.

Considerable young growth is coming
on and will do well if not
destroyed by porcupines or
something else.

The whole country is fine
stock range with abundance
of good grass, water & cool
+ warm slopes for winter.

Aug. 4. Returned by way of
Boulton Butte, near which we
shot 7 *Anthus spraguei*.

The Butte is big and high &
the birds probably nest on it.

Got back to Sentinel Butte
at 5 P.M.

Aug. 5 - Packed up, wrote reports
& notes, and took train
at 9 P.M. for Glendive,
where we had to stay until
morning for a train to Billings.

Aug. 6, Left Glendive at 6 AM
+ reached Billings at 12 M.
Valley very dry and unirrigated
crops generally short.
Grass brown & low & much
curled up.

Lots of *Sarcobatus*, *Atriplex*
canescens, *nuttallii* & *confertifolia*.
Artemisia *canadensis* & *leucocarpa* &
some *tridentata* & *frigida*,
lots of *Begonia grandis*,
Tortifolia, some *canescens* &
the woody white short leaved
canescens, some *Gutierrezia*,
lots of *Eurotia*, some *Munzbergia*
loweana, *Aquilegia platensis*,
Abronia (white) & many
other Sonoran plants, but
also many Transition species.
The whole valley is mixed with
hills generally covered with yellow
pines.

Hunted all along rim
rock at Billings & Canyon
wrens but found none.

Rock Wrens are abn. & also
Sageornis & Cliff swallows nests
chipmunks & long eared
cottontails.

A circus in Billings &
not a room to be had in
town. So we returned to
Huntley at 8 PM, arriving
at 9:30, and staid over
night & catch the 8 AM
train to Sheridan.

Aug. 7, Left Huntley at 8:20 AM
on C B & Q and arrived at
Shelburne, Wyo., at 12:30

Baggage did not come.

Aug. 8, Wrote on beetle reports
, called on Forest Supervisor
and got information about
country and roads.

Aug. 9 Got team and drove over to
Wolf and then up Wolf Creek 5 miles to the
Eaton Bros Ranch - The Dude Ranch.
Arrived at 2 PM & set a few traps
for *Neotoma* but it rained steadily
all the afternoon.

The ranch is on Wolf Creek as it
comes out of the canyon.

The mountains are hidden in clouds,
but run up steep & timbered from the
base

Aug. 10, Trails to wet & slippery for a horse so I started up on foot & followed up Wolf Creek trail to 8000 feet, turning south toward the peaks. Got Transition & Canadian zone lines. Tramped all day & got back to ranch at 7 P.M.

Aug 11 - Drove back to Sheridan ^(18 miles) and in P.M. wrote reports.

Aug. 12 - Packed up & left Sheridan on 12:58 P.M. train and reached Arvada at 3 P.M. Set traps & hunted. The Powder River valley is pure Sonoran. Found lots of Perodipos & shot a *Rithiodontops* & a *Sceloporus*.

The valley seems to be purely Sonoran. Very hot & dry.

Aug. 13. Went to traps & hunted in forenoon. Took 3 P.M. train to Gillette, arriving at 4:20. Mapped zones along R.R. Stopped at the Montgomery Hotel. A very barren, and uninteresting country. all stock, no grazing.

Aug 14 - Wrote reports and got them all up to date before leaving on 4:25 train for Moorcroft. Arrived about 5:30. Little has been and unattractive than Gillette. all stock country & shaped to death.

Saw one fine flock of Sage hens. The Belle Fourche is low and barely runs a ripple over the narrow plains. Some big cottonwoods. Seems to be all Sonoran.

Aug. 15 Hunted all forenoon
Collected & sent in a lot of plants
Got one *Eutamias pallidus*.
Stage does not go to Sundance till tomorrow

Aug 16, Took Stage at 7 AM for
Sundance & arrived there at
4 PM. 42 miles

Moorecroft is 4211 feet and
Sundance 4750 and the highest
ridge between is 4900 feet.

At Moorecroft there is a strong
element of Sonoran and at
Sundance a trace in both slopes
but the general region is
mainly Transition.

Yellow pines & blue oaks cover
the ridges but great slopes
& valleys are open & grassy
dry farming is common
but usually poor.

Aug. 17-20 Sundance.

Collected in gulch NW of town
mostly on Mr. Starn's place.
Trapped along creek & in
meadows & woods and
cliffs.

The weather is very hot &
dry and there has been but
little rain this year.

Crops are generally poor
except where the best of
farming methods have been
followed. Grass & feed is
rather short but good and
stock are doing well.

Stock raising is the main
industry and change to dry
farming is coming slowly
and with a great majority of
failures.

Aug. 20 Drove up to Boek's Mine
near Warren Peak in the
Bear Lodge Mts. & stayed over
night, setting traps & hunting
for snowshoe rabbits and
Woodchucks, neither of which
I could find a trace of.
Got a Peromyscus & Jack rabbit
& some mice & Citellus.
& notes on birds.
Mapped the Canadian zone of
the Mts. from the peaks.

Aug. 21, Came back to Sundance
and made up specimens &
got ready for another trip.

Aug. 22 - With team & drivers & camp outfit started for Mts. east of town. Went to Calvert's ranch, then up Rattlesnake Creek to near peak of Cement Ridge, and camped at the Forest ranger pasture a half mile below the Lookout Station on peak and set traps till dark. Camp was about 6000 feet. Canadian zone on cold slopes, transition on warm slopes to top of ridges & 6500 ft. lots of good yellow pine timber, dense growth of aspens on cold slopes. No spruce or fir. lots of bur oak with yellow pines. Ranches all along creek bottoms, raise hay & grain & potatoes & keep stock to range on Nat. Forest.

Aug. 23. Went up to Lookout station on peak where Van Meter keeps watch for fire. Then struck east and north to Tintin & Welcome and then north down long ridge to Sand Creek Canyon & up it about 4 miles to Jack Boyd's place where we camped two nights. Most of the top of the Mts. have been burnt over & grown up to dense second growth of aspens & oaks & berries & oaks are abundant. A few remaining camps are mostly abandoned & people are scarce. There are great areas of fine yellow pine timber on the north slopes lower down.

Sand Canyon is 1000 to 2000 feet deep, steep walls & timbered sides, and the most beautiful stream & big oak bottoms I ever saw. It is a paradise for fishing, hunting, trapping, camping & for fruit & gardens & homes.

Aug. 25 - Left Sand Creek Canyon
+ drove down to Belah, then NE to
Aladdin + up the S. fork of Hay Creek
to where Paul Kleinadam lives, about
3 miles south of Eothan.

Camped at the ranch of this old
German naturalist, taxidermist,
bear hunter, cow puncher + rancher
+ talked half the night with him
about old times.

Got a lot of skulls + saw tons more.

Aug. 26. Took a short cut over
Table Mtn. to Sundance + got
in about 1 P.M., Made up
specimens most of day
+ part of night.

Aug. 27 - Sundance.
Packing + writing.

Aug. 29. Staged for Sundance
to Upton, 32 miles,
Upton said to be 4500 feet.
Drove past Sny Levee and across
Sny Levee Cr. Mason + Dry Creek
Open valleys and gulches
ridges all the way.
Upton is partly in the pines
+ partly in bare shale valley.
All transition zone, no trace of
Sonoran. High bare ridges
to west. lots of sagebrush
+ very arid.

Aug. 30 - Lft Lpton 7 AM on C.D. & Q
to Edgmont, arriving 9 AM.

Struck Sonoran valley just before reaching Newcastle & thence kept close to yellow pines on east but in Sonoran open valleys.

At Edgmont, in Chuzne River valley it is mainly hot, arid & sodan, rather dry & bar, with some sagebrush & lots of *Sarcobatus* & *Opuntia* & some *Artemisia platyneura* & *Euphorbia* like *nauseosa*, & lots of big *Chrysothamnus graveolens*.

Populus fremontii makes wide groves
on the river bottoms which are
mainly sandy

Dry farming is generally poor & badly dried up.

Sept. 1 Left Edgmont at 9 AM
for Deadwood & Spearfish.

Soon entered hills with yellow pine
& juniper and a trace of sorsoran spruces
on hot slopes up as far as Minnikata.

Then yellow pines & open parks & meadows to Custer, with only slight traces of Canadian zone on cold slopes, shown by strips of aspens & white birch. Not enough to map however before reaching Custer.

Prairie dogs abn in lower parks.

Thomomys very numerous in fields & meadows.
 Convolvulus, Agrostis, Agrostis, Agrostis.
 North of Quater there is more heavy Canadian
 with white birch, aspen, and willow & pine
 cherry on cold slopes, and over the first
 divided lots of Piegan - to Hill City,
 where we stopped for supper & got dark.
 Reached Deadwood 10 PM

Sept. 2 Left Deadwood 7 AM for
Spearfish - Arriving 10 AM.

At Deadwood Canadian on NE +
Transitina SW + open slopes.

Spruces, aspens + ^{white} birch obs on cold slopes
Yellow pine + oak on warm slopes,
Narrow leaved cottonwood + western birch
along streams.

Engelwood, mainly Canadian,
dense spruce + aspen + all cold slopes
Terry 6100 ft, on side of Terry Peak
7069 ft, All Canadian. Big rock
slides on Peak good for Ochotona.
Togon, same level on NE side
of peak. All Canadian

Elmore, head of Spearfish Canyon, dense
spruce, good collecting locality.
Station + camp.

Sarvey, Station + rustic hotel - timber
all burnt out of canyon.

Iron Creek Station, Stop for stage
to Tintar, 8 miles up hill.

No more stops down canyon to
Spearfish. Lower part of canyon
burned out but filling up with several
growth. Canadian reaches to
near lower end on steep NE
exposures. Oak, Elm, Ironwood,
ash boulders + narrow leaved
cottonwood in bottom of lower canyon.
+ reaching down to Spearfish.

Spearfish is very pleasant, good
town + hotel + trees + grass and great
abundance of and variety of apples.
big fields of alfalfa + grain below.

Range of Soraun on warm slopes
bottoms + cold slopes transition.

Solanum rostratum, Cleome, Euphorbia,
Yucca + cactus on warm slopes.

Sept. 3 Staged to Bill Founds.

St to 10 AM. 16 miles.

Big farming valleys along streams.
Wheat + grain + fruit, fine apples.

Sonoran zone on warm slopes &
levels. Pines + oaks on ridges &
cold slopes.

Left Bill Founds on train at 5 PM.

Reached Sturgis at dark &

Chadron, Neb. at 12 P.M.

Sept 4. Left Chadron at 7:20 AM

Reached Casper at 4 P.M.

See reports for Physiography.

Sept. 5. Left Casper at 11 AM. and

Arrived at Cheyenne at 7 P.M.

Colored zone map along way.

Sept. 6. Remained at Cheyenne, Saw

Gov. Carey & got promise of permit for
2 M.O.D.

Sept. 7. Left Cheyenne on N.P. for

Denver 9:20 AM, arrived

Denver 12 M.

Left Denver on C.B. & Q. for Lincoln
Nebraska at 3:30 P.M.

Sept 8, Arrived at Lincoln at

1:30 AM. got room at Lincoln

Hotel and went to University

to see Prof. Wolcott, & Swenk,

and Mr. Shoemaker and Mr.

Zimmer.

Came on to Omaha (2:10 to

3:30 PM) with prof. Wolcott

and left on C. & NW. for

Vermillion, S. Dak. at 7 P.M.

Arrived Sioux City 11 PM

Sept 9, Took C.M. & St. train for

Vermillion, 10-11 A.M.

Sept. 10 Left Vermillion at 2:30 P.M.
Chicago, M. St. P. train via Sioux City
for Chicago

Sept. 11 Arrived Chicago
9:30 A.M. and left at
10:30 on Penn.
Due in Washington 8:25 tomorrow

Sept. 12 Arrived Washington
9:25 A.M. on boat lot

✓

<u>Green snake</u>	Sully Hill	
	Sentinel Butte	
<u>Boscawia</u>	Whitehorse Ranch	1 sp.
	Sentinel Butte	1
	Medora	1
	H. Clark	2
<u>Pituophis</u>	N.D. Nat. Forest	1 sp.
	Magpie Cr.	
	H. Clark	
	Medora	
	Quinn	
	Sentinel	
<u>Edwardsia</u>	H. Clark	
	Magpie Cr.	
	Wahdan	
	Whitehorse Ranch	
	Kennecott	
	Croston	
<u>Eutamias</u>	Big Horn Mts.	
<u>ragrans</u>	Bear Lodge Mts.	
	Black Hills	

2071
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Crotalus confluentis

Sentinel	core	
N.D. Nat. Forest	"	
Mikkleson	seen	(2)
Quinnian	"	"
Glen Udon	substituted	(2)
Mandan ?	sees	

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